



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8960

JAN 30 2020

Ms. Julie Espy
Acting Director
Division of Environmental Assessment & Restoration
Florida Department of Environmental Protection
Mail Station 3000
2600 Blair Stone Road
Tallahassee, Florida 32301

Dear Ms. Espy:

The U.S. Environmental Protection Agency has completed its review of the document titled *Nutrient TMDLs for Kings Bay, Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion (WBID¹ 134I, 134IC, 134ID, 134IF, 134IG, and 134IH)*. The Florida Department of Environmental Protection (FDEP) submitted the Kings Bay, Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring Total Maximum Daily Loads (TMDLs) and revised Chapter 62-304, Florida Administrative Code (F.A.C.),² including the numeric nutrient criteria (NNC) for the subject waters, in a letter to the EPA dated December 4, 2019 as TMDLs and as new or revised water quality standards (WQS) with the necessary supporting documentation and certification by FDEP General Counsel, pursuant to Title 40 of the Code of Federal Regulations part 131.

The NNC were adopted under Chapter 62-304.645(18) as site-specific numeric interpretations of paragraph 62-302.530(48)(b). As referenced in paragraph 62-302.531(2)(a), the FDEP intends for the submitted NNC to serve in place of the otherwise applicable criteria for springs set out in paragraph 62-302.531(2)(b). The nitrate and orthophosphate TMDLs for Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring would also constitute site-specific numeric interpretations of the narrative nutrient criterion, set forth in paragraph 62-302.530(48)(b), for these water segments. The site-specific numeric interpretations of the narrative nutrient criterion for Kings Bay were previously approved on October 19, 2017.

The FDEP submitted the Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring TMDLs to the EPA for review pursuant to both Clean Water Act (CWA) sections 303(c) and 303(d) since the TMDLs will also act as Hierarchy 1 (H1) site-specific interpretations of the State's narrative nutrient criterion pursuant to 62-302.531(2)(a)1.a. The enclosed WQS decision document summarizes the EPA's review and approval of the WQS contained in the TMDL document. The EPA's decision document memorializes the EPA's review and approval of the water quality standard, in accordance with 303(c); nothing herein should be construed to constitute a review or approval of the

¹ WBID refers to waterbody identification

² Unless otherwise stated, all rule and subsection citations are to provisions in the Florida Administrative Code.

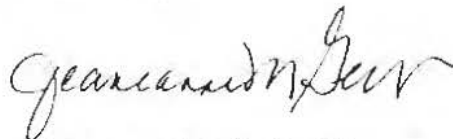
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TMDL submitted pursuant to 303(d). The EPA will conduct its review of the TMDL following this approval of the water quality standard.

In accordance with section 303(c) of the CWA, I am hereby approving the revised WQS for nitrate and orthophosphate for Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring. Any other criteria applicable to these waterbodies remain in effect. The requirements of paragraph 62-302.530(48)(a) also remain applicable.

If you have any comments or questions relating to the approval of the H1 WQS, please contact me at (404) 562-9345, or have a member of your staff contact Dr. Katherine Snyder in the WQS program at (404) 562-9840.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeaneanne M. Gettle". The signature is fluid and cursive, with a large initial "J" and "G".

Jeaneanne M. Gettle, Director
Water Division

Enclosure

cc: Mr. Kenneth Hayman, FDEP
Mr. Daryll Joyner, FDEP
Mr. Ansel Bubel, FDEP

Florida Numeric Interpretation of the Narrative Nutrient Water Quality Criterion Through Total Maximum Daily Loads (TMDLs) to Establish a Hierarchy 1 (H1): Water Quality Standards (WQS) Decision Document

H1: Nutrient TMDLs for Kings Bay, Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring (waterbody identification (WBID) 1341, 1341C, 1341D, 1341F, 1341G, 1341H)

Location: Citrus County, Florida

Status: Final

Criteria Parameter(s): For Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring, the site-specific criteria are:

Nitrate: 0.23 mg/L, expressed as an annual geometric mean (AGM), not to be exceeded more than once in any 3-calendar-year period.

Orthophosphate: 0.028 mg/L, expressed as an AGM, not to be exceeded more than once in any 3-calendar-year period.

Background: The Florida Department of Environmental Protection (FDEP) submitted the final H1 for the *Nutrient TMDLs for Kings Bay, Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion (WBID 1341, 1341C, 1341D, 1341F, 1341G, and 1341H)* (the report) by letter dated December 4, 2019. The draft report was received by the EPA on September 17, 2013. The final report dated June 2014 includes H1 target concentrations and loads. A final report was received by the EPA on December 6, 2019. The NNC contained in the report for Kings Bay were approved by the EPA in a separate decision on October 19, 2017.

The submission included:

- Submittal letter
- Nutrient TMDL for Kings Bay, Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion
- Documents related to Public Workshop
- Documents related to Public Hearing
- Documents related to Public Notice for Rulemaking and Rule Adoption
- Public Comments Received

This document explains how the submission meets the Clean Water Act (CWA) statutory requirements for the approval of WQS under section 303(c) and the EPA's implementing regulations in Title 40 of the Code of Federal Regulations (40 C.F.R.) part 131. The decision document memorializes the EPA's review and approval of the water quality standard, in accordance with 303(c); nothing herein should be construed to constitute a review or approval of a TMDL pursuant to 303(d).

WQS REVIEWER: Katherine Snyder, WQS Coordinator, snyder.katherine@epa.gov

EPA HIERARCHY 1 REVIEW DOCUMENT - WQS

Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring (WBID 1341C, 1341D, 1341F, 1341G, 1341H)/ Springs Coast Basin – Nutrients

This document contains the EPA's review of the above-referenced H1. This review document includes WQS review guidelines that state or summarize currently effective statutory and regulatory requirements applicable to this approval action. Review guidelines are not themselves regulations. Any differences between review guidelines and the EPA's implementing regulations should be resolved in favor of the regulations themselves. The italicized sections of this document describe the EPA's statutory and regulatory requirements for approvable H1s. The sections in regular type reflect the EPA's analysis of the state's compliance with these requirements.

I. WQS Decision – Supporting Rationale

Section 303(c) of the CWA and the EPA's implementing regulations at 40 C.F.R. section 131 describe the statutory and regulatory requirements for approvable WQS. Set out below are the requirements for WQS submissions, under the CWA and the regulations. The information identified below is necessary for the EPA to determine if a submitted WQS meets the requirements of the CWA and, therefore, may be approved by the EPA.

1. Use Designations

Section 131.10(a) provides that each state must specify appropriate water uses to be achieved and protected. The classification of the waters of the state must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. In no case shall a state adopt waste transport or waste assimilation as a designated use for any waters of the United States.

Assessment: Hunter Spring, House Spring, Idiot's Delight Spring are classified as Class III Freshwater (fish consumption; recreation; and propagation and maintenance of a healthy, well-balanced population of fish and wildlife). Tarpon Spring, and Black Spring are classified as Class III Marine (fish consumption; recreation; and propagation and maintenance of a healthy, well-balanced population of fish and wildlife).

2. Protection of Downstream Uses

Section 131.10(b) provides that in designating uses of a waterbody and the appropriate criteria for those uses, the state shall take into consideration the WQS of downstream waters and shall ensure that its WQS provide for the attainment and maintenance of the WQS of downstream waters.

Rule 62-302.531(4) of the Florida Administrative Code (F.A.C.) requires that downstream uses be protected. Spring flows from the Kings Bay system (including Hunter Spring, Idiot's Delight Spring, House Spring, Tarpon Spring, and Black Spring) flow downstream through the Crystal River and into the Gulf of Mexico. When the nutrient criteria established in this report are met, algal growth that contributes to the floral imbalances will be reduced to background levels. Since the source of elevated nutrients in the system is predominately from spring flow, decreasing the concentration from the springs will also reduce nutrients in the Crystal River. The Crystal River is not listed as impaired, and reductions in nutrients from this TMDL are not expected to cause additional nutrient impairments downstream.

Assessment: The H1s are providing use protection for the downstream waters.

EPA HIERARCHY I REVIEW DOCUMENT - WQS

Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring (WBID 1341C, 1341D, 1341F, 1341G, 1341H)/ Springs Coast Basin – Nutrients

3. Water Quality Criteria

Section 131.11(a) provides that states must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use.

Hunter Spring, Idiot's Delight Spring, House Spring, Tarpon Spring, and Black Spring were listed as impaired for nutrients (algal mats) based on photographic evidence of algal smothering collected by the FDEP staff and other evidence of algal distribution that was obtained from reports produced by the Southwest Florida Water Management District (SWFWMD) and Jacoby et al. (2007; 2011). Elevated nutrient concentrations and the corresponding evidence in Kings Bay and vicinity of the headsprings indicated an imbalance in flora and fauna caused by algal smothering. This information was used in the determination of impairment for the 2012 Verified List of impaired waters.

Algal growth rates are enhanced in areas near spring vents where spring flows deliver a steady concentration of nutrients (Stevenson, as cited in Heffernan et al. 2010). The purpose of this TMDL document is to establish the maximum allowable nitrogen and orthophosphate (as concentration limits) in water delivered to Kings Bay to restore the waterbody so that it meets its applicable water quality criterion for nutrients. The FDEP believes that reducing the growth rate of macroalgae (including *Lyngbya* and *Chaetomorpha*) through nutrient reduction (nitrate and orthophosphate concentrations) will cause filamentous algae biomass and phytoplankton productivity to decrease.

The site-specific nutrient concentrations are based on a study by Stevenson et al. (2007), which documented the *Lyngbya* filamentous algae growth under a series of nitrate and orthophosphate concentrations, as described in the report (p.96). The study used a freshwater *Lyngbya* species, which was determined to be appropriate for the springs in this report because the springs have freshwater runs with a tidal pressure that causes a salinity barrier. This in turn has the fresh water from the spring vent pond in the run creating a longer holding time, thus making the results of the Stevenson et al. (2007) study appropriate for all the spring WBIDs (E. Rasnake at FDEP, personal communication, October 22, 2019).

The Stevenson et al. (2007) study found that the threshold concentration for growth of *Lyngbya* sp. had a saturating nitrate concentration of 0.23 mg/L and a saturating orthophosphate concentration of 0.028 mg/L. The study suggested that nutrient concentrations less than 0.028 mg/L orthophosphate and 0.23 mg/L nitrate are needed to slow the growth of *Lyngbya* sp. Orthophosphate criteria are established in addition to nitrate because TP is increasing slightly in Kings Bay (WBID 1341), based on statistical analyses. For each spring WBID, orthophosphate is considered the target nutrient because Stevenson et al. (2007) found that for *Lyngbya* sp., orthophosphate is limiting when nitrate concentrations are greater than 0.05 mg/L.

In EPA's 2010 Technical Support Document for U.S. EPA's Final Rule for Numeric Criteria for Nitrogen/Phosphorus Pollution in Florida's Inland Surface Fresh Waters, the EPA found that nitrate concentration can vary on an inter-annual basis (Brown et al. 2008). To accurately capture this variability, the EPA concluded that the most appropriate approach to characterizing nitrate-nitrite in springs is over an annual averaging basis, or more specifically as an AGM nitrate. For frequency of excursion, the EPA considered the variable temporal responses of algae to nitrate-nitrite in the various

EPA HIERARCHY 1 REVIEW DOCUMENT - WQS

Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring (WBID 1341C, 1341D, 1341F, 1341G, 1341H)/ Springs Coast Basin – Nutrients

studies previously described and concluded that the springs criteria should not be exceeded more than once (as an AGM) over any three-year period. The FDEP has applied this rationale to the site-specific criteria for Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring.

Assessment: The site-specific nutrient criteria for Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring are 0.23 mg/L nitrate and 0.028 mg/L orthophosphate, expressed as AGMs, not to be exceeded more than once in any 3-calendar-year period. These criteria are expected to protect the designated use of the waterbody by reducing filamentous algae growth. Any other criteria applicable to these waterbodies remain in effect.

4. Scientific Defensibility

Section 131.11(b) provides that, in establishing criteria, states should establish numerical values based on 304(a) guidance, 304(a) guidance modified to reflect site-specific conditions, or other scientifically defensible methods.

Hunter Spring, Idiot's Delight Spring, House Spring, Tarpon Spring, and Black Spring were listed as impaired for nutrients (algal mats) on the 2012 Verified List of impaired waters.

The nitrate and orthophosphate criteria are based on several studies conducted in both Kings Bay and similar systems that discuss filamentous algae growth in relation to residence time, salinity, seasonality, and nutrient concentrations. Nitrate and orthophosphate criteria are established to represent conditions where algal coverage was within acceptable ranges (20% coverage per the numeric nutrient criteria (NNC) for floral imbalance). For all the springs in this report, nitrate and orthophosphate criteria are established to be 0.23 mg/L and 0.028 mg/L, respectively, expressed as AGMs, not to be exceeded more than once (as an AGM) over a three-year period. Reducing the growth rate of macroalgae (including *Lyngbya* and *Chaetomorpha*) through nutrient reduction will decrease the growth rate and coverage of filamentous algae.

Assessment: The EPA determined that the selection of filamentous algal growth coverage as the response variable target is appropriate and the technical approach to determine nitrate and orthophosphate concentrations is scientifically sound. The resulting water quality is expected to protect the designated uses for this waterbody.

5. Public Participation

Section 131.20(b) provides that states shall hold a public hearing when revising WQS, in accordance with provisions of state law and the EPA's public participation regulation (40 C.F.R. part 25). The proposed WQS revision and supporting analyses shall be made available to the public prior to the hearing.

A public workshop was conducted by the FDEP on September 27, 2013 in Crystal River, Florida, to obtain comments on the draft nutrient TMDLs for Kings Bay, Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring. The workshop notice indicated that the nutrient TMDLs, if adopted, constitute site-specific numeric interpretations of the narrative criterion set forth in paragraph 62-302.530(48)(b), F.A.C., that would replace the otherwise applicable NNC in subsection 62-302.531(2), F.A.C., for these particular waters. The FDEP also held a public hearing on May 14, 2019 in Tallahassee, Florida.

EPA HIERARCHY 1 REVIEW DOCUMENT - WQS

Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring (WBID 1341C, 1341D, 1341F, 1341G, 1341H)/ Springs Coast Basin – Nutrients

Assessment: The FDEP has met the public participation requirements for these H1s.

6. Certification by the State Attorney General

Section 131.6(e) requires that the state provide a certification by the state Attorney General or other appropriate legal authority within the state that the WQS were duly adopted pursuant to state law.

A letter from the FDEP General Counsel, Justin G. Wolfe, dated December 4, 2019, certified that the Kings Bay, Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring TMDLs were duly adopted as WQS pursuant to state law.

Assessment: The FDEP has met the requirement for Attorney General certification for these H1s.

7. Endangered Species Act Section 7 Consultation

Section 7(a)(2) of the Endangered Species Act (ESA) requires federal agencies, in consultation with the Services, to ensure that their actions are not likely to jeopardize the continued existence of federally listed species or result in the destruction or adverse modification of designated critical habitat of such species.

The U.S. Fish and Wildlife Service (USFWS) provided concurrence with the EPA's programmatic consultation on site-specific nutrient criteria for the FDEP on July 21, 2015 for any site-specific nutrient criteria that are more stringent than the existing default nutrient criteria in place in the state of Florida for the waterbodies. Because the site-specific criteria in this report for nitrate are more stringent than the default criterion, an additional ESA section 7 consultation for this standards action is not required.

The addition of the orthophosphate criterion for the waterbodies is an addition to the site-specific nitrate criterion for the waterbodies and will provide another level of protection. The EPA initiated informal consultation with USFWS on the 0.028 mg/L orthophosphate value for Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring on December 6, 2019 and received a letter of concurrence on January 28, 2020.

Assessment: The EPA has met the ESA requirements for this action.

EPA HIERARCHY 1 REVIEW DOCUMENT - WQS

Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring (WBID 1341C, 1341D, 1341F, 1341G, 1341H)/ Springs Coast Basin – Nutrients

II. Conclusion

The EPA Region 4 Water Division Director is **APPROVING** the H1 NNC addressed by this decision document in accordance with section 303(c) of the CWA, as consistent with the CWA and 40 C.F.R. part 131.

The H1 NNC presented in this decision document will constitute the site-specific numeric interpretations of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b), F.A.C., that will replace the otherwise applicable numeric criterion for nitrate in paragraph 62-302.531(2)(b) for these particular waters, pursuant to paragraph 62-302.531(2)(a)1.b., F.A.C. Based on the chemical, physical, and biological data presented in the development of the H1 NNC outlined above, the EPA concludes that the revised NNC for nitrate and the addition of orthophosphate criteria provide for and protect healthy, well-balanced, biological communities in the waters to which the NNC apply and are consistent with the CWA and its implementing regulations at 40 C.F.R. section 131.11.

Therefore, the revised nutrient criteria for Hunter Spring, House Spring, Idiot's Delight Spring, Tarpon Spring, and Black Spring are 0.23 mg/L nitrate and an addition of an orthophosphate criteria of 0.028 mg/L, both expressed as an AGM concentration, not to be exceeded more than once in a three-year period. All other criteria applicable to these waterbodies remain in effect. The requirements of paragraph 62-302.530(48)(a), F.A.C. also remain applicable. The NNC contained in the report submitted by FDEP for Kings Bay were approved in a separate decision on October 19, 2017.

The EPA's decision document memorializes the EPA's review and approval of the water quality standard, in accordance with 303(c); nothing herein should be construed to constitute a review or approval of a TMDL pursuant to 303(d).